



Contribution ID: 234

Type: Parallel Flash talk

Progresses of the multi-PMT optical module for the Hyper-K experiment

Thursday, 25 February 2021 12:20 (5 minutes)

Hyper-Kamiokande (HK) is the next generation large volume water Cherenkov detector under construction in Japan. Its physics program includes nucleon decay, neutrinos from astronomical and accelerator, with the main focus to determine the leptonic CP violation, with a fiducial volume, that is 8 times larger than its precursor Super-Kamiokande (SK).

To detect the weak Cherenkov light generated by neutrino interactions or proton decay, in addition to the 20" PMTs as used in SK, the employment of the multi-PMT (mPMT) concept, consisting of 3" PMTs, readout electronics and power inside a pressure vessel firstly introduced in the KM3NeT detector, is considered. Indeed, it offers several advantages as increased granularity, reduced dark rate, weaker sensitivity to Earth magnetic field, improved directional information and timing resolution with an almost isotropic field of view.

In this contribution the development of a mPMT module for HK is presented.

Collaboration name

Hyper-Kamiokande

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Session Classification: Data Science and Detector R&D